REVISION B

Process Based Mission Assurance (PBMA) Process

Michael A. Greenfield, Ph.D.
Acting Associate Administrator for
Safety and Mission Assurance

February 1, 2002
Date

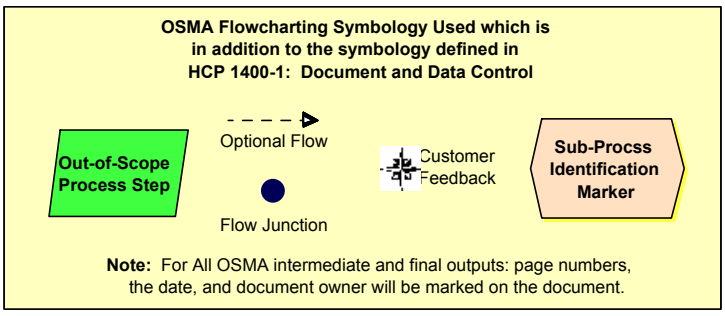
DOCUMENT HISTORY LOG

Status (Draft/ Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		January 13, 2000	
Revision	A	April 14, 2000	Editorial corrections to step 6.01, 6.05 and 2nd Quality Record in Section 7; Modifications to Section 5 flowchart to add inputs and move step 6.15 (new #) and steps 6.04, 6.06, 6.08, 6.10 and 6.13 through 6.16.
	B	February 1, 2002	Removed one author. Added customer list, customer feedback to sections 5 and steps 6.07, 6.15, and 6.17.

HQOWI Author: QE/Steven Newman with QE/Steve Wander

OSMA Staff Member Responsible for this HQOWI: QE/Pete Rutledge

Customers for this HQOWI: Internal: Administrator, AA/SMA, Enterprise AAs
External: none



1. Purpose

The purpose of this Office of Safety and Mission Assurance (OSMA) Headquarters Office Work Instruction (HQOWI) is to document the process for conducting program independent assessments and reviews. This HQOWI also specifies the Quality Records associated with the process. This responsibility for performing independent assessments and reviews is derived from NPD 8700.1, *NASA Policy for Safety and Mission Success,* which identifies responsibilities of the Associate Administrator for Safety and Mission Assurance including (paragraph 5.b.9):

> "Ensuring oversight and independent assessments to ascertain that appropriate risk management practices are used for the identification, documentation, evaluation, and disposition of all SRM&QA risks for all programs, projects and operations."

2. Scope and Applicability

The scope of OSMA independent assessment activity is agency-wide and cuts across all NASA programs and projects consistent with SMA responsibilities documented and outlined in NPD 8700.1 (reference 4.1). This HQOWI is applicable to HQ individuals responsible for implementing OSMA independent assessments, namely the core members of the OSMA Independent Assessment Team at NASA Headquarters (Codes QE and QS). It serves as a guide for conducting "process level" mission assurance assessments within the ten basic areas of: procurement, management, design & engineering, design verification & test, software design, software verification & test, manufacturing, manufacturing verification & test, operations, and pre-flight verification & test. These Process Based Mission Assurance (PBMA) (Appendix A Supplemental References) elements parallel a typical program/project life-cycle development. The PBMA approach or methodology is grounded in risk management discipline, which consists of: 1) identification, 2) analysis, 3) planning, 4) tracking, 5) controlling and documenting, and of risks. Thus, program management acceptance of, or an "eyes open" approach to, residual risks is an essential element in informed management decision making.

3. Definitions

3.1. AA/SMA: Associate Administrator for Safety and Mission Assurance

3.2. Code QE: Enterprise Safety and Mission Assurance Division

3.3. Code QS: Safety and Risk Management Division

3.4. Enterprise AA: Associate Administrator for one of the NASA HQ Strategic Enterprises

3.5. HATS: Headquarters Action Tracking System

3.6. PBMA: Process Based Mission Assurance

3.7. POC: Point of Contact

3.8. SMP: Schedule Management Plan

3.9. TIM: Technical Interchange Meeting

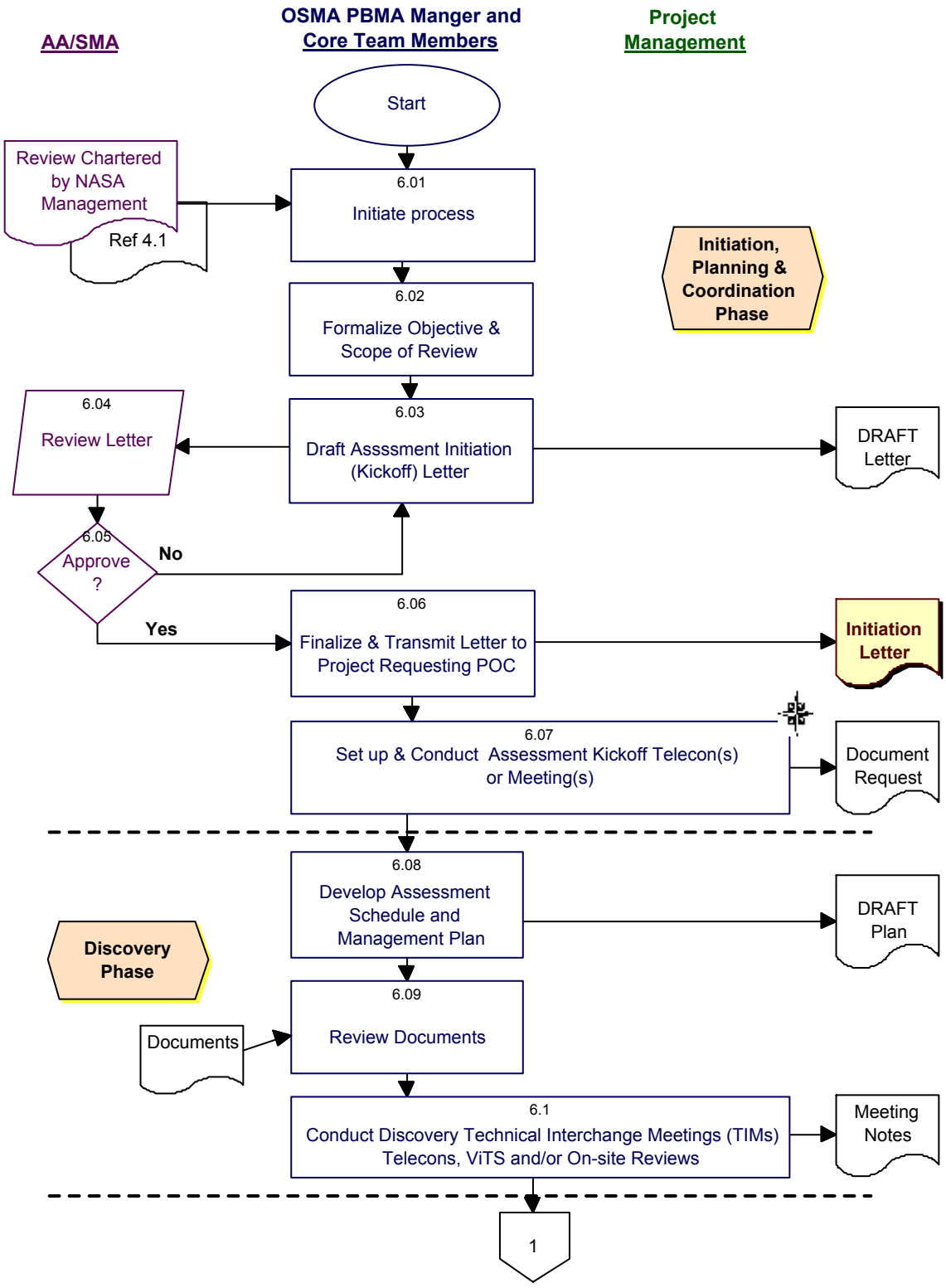
3.10. ViTS: Video Telecommunications System

4. Reference Documents

The documents listed in this section are used as reference materials for performing this process.

4.1. NPD 8700.1: NASA Policy for Safety and Mission Success (paragraph 5.b.9)

5. Flowchart


AA/SMA
OSMA PBMA Manger and Core Team Members
Project Management
Start
Review Chartered by NASA Management
Ref 4.1
6.01
Initiate process
Initiation, Planning & Coordination Phase
6.02
Formalize Objective & Scope of Review
6.04
Review Letter
6.03
Draft Asssment Initiation (Kickoff) Letter
DRAFT Letter
6.05
Approve ?
No
Yes
6.06
Finalize & Transmit Letter to Project Requesting POC
Initiation Letter
6.07
Set up & Conduct Assessment Kickoff Telecon(s) or Meeting(s)
Document Request
6.08
Develop Assessment Schedule and Management Plan
DRAFT Plan
Discovery Phase
6.09
Review Documents
Documents
6.1
Conduct Discovery Technical Interchange Meetings (TIMs) Telecons, ViTS and/or On-site Reviews
Meeting Notes
1

Error! Not a valid link.

6. Procedure

Note: The need for an independent assessment can come from various sources internal to and external to NASA to increase the insight visibility and understanding of a NASA program/project. Sources can include the NASA Administrator, Enterprise Associate Administrator, Associate Administrator for Safety and Mission Assurance (AA/SMA), Center Management, or Center Project/Program Management. All requests are routed through the AA/SMA for approval to conduct a PBMA independent assessment.

INITIATION PHASE

6.01 PBMA Manager/Core Team Initiate Process:

The PBMA manager initiates the assessment process upon being notified that an independent assessment is required. The PBMA defines an expanded team membership and initiates discussions with management to refine the assessment objectives, scope and schedule.

6.02 PBMA Manager/Core Team Formalize Objective & Scope:

The core team defines, formalizes and documents the independent assessment objective and scope and establishes a working timeline for completion of the Initiation, Discovery, and Production phases.

6.03 PBMA Manager/Core Team Draft Assessment Initiation (Kickoff) Letter:

The team drafts a letter notifying the Enterprise AA for the project to be assessed that a PBMA independent assessment will be conducted on their project/program. The letter contains the following key informational characteristics: rationale, scope, objectives and proposed timeline. The letter also identifies OSMA Points of Contact (POC) and outlines the level of support required from the Enterprise or program/project management staff. The PBMA manager briefs the AA/SMA on the proposed scope, schedule, team members and other important factors to be addressed during the independent assessment. The PBMA team and OSMA management incorporate comments as necessary to reach agreement on letter content. The AA/SMA provides the comments and/or changes deemed appropriate. The letter serves as a "contract" between the assessment team, the AA/SMA and the AA Enterprise.

6.04 AA/SMA Review Letter

The AA/SMA reviews the draft letter to ensure it conforms with NASA SMA policy in reference 4.1 and that the planned review is properly defined in NASA's best interest. This assessment is based on his/her professional judgment.

6.05 AA/SMA Approve?

If the letter is acceptable, the AA/SMA signs and forwards it to the PBMA Manager for mailing. The initiation letter is filed as a Quality Record. If it is not acceptable, the AA/SMA returns the letter the PBMA Manager for revision.

6.06 PBMA Manager/Core Team Finalize/Transmit Initiation Letter to Project Requesting POC:

The Team incorporates the AA/SMA comments and sends the letter to the Enterprise AA with copies to the Center and program/project management. Program/project management is encouraged to provide copies to the contractor leads to ensure their participation in the PBMA assessment. The letter to project management comprises the first Quality Record for the PBMA assessment process. The letter explicitly requests the identification of a assessment point of contact (POC) to assist the OSMA assessment team with scheduling, logistics and document acquisition. The letter is filed as a Quality Record.

6.07 Project Management/ PBMA Core Team Set up and Conduct Assessment Kickoff Telecom or Meeting:

The PBMA Manager, with the OSMA Team, sets up the initial kickoff meeting(s) with the project POC and staff. These meetings are usually held at NASA Headquarters with telecom participation by others outside of the HQ commuting area. Prior to the meeting, the PBMA Manager presents an introduction and objectives viewgraph package to the AA/SMA for review. The PBMA manager will:

- identify OSMA expectations and SMA focus-issues,
- provide clarification and understanding of specific SMA focus issues,
- develop brief "questions to be addressed" paragraph for each SMA focus issue.

The kick-off telecon/meeting products/outcomes include the following:

- schedule for telecon interviews,
- processes to be evaluated,
- process owners to be interviewed,
- documents to be provided to the OSMA assessment team by the project.

(Internal Customer Feedback).

DISCOVERY PHASE

6.08 PBMA Manager/Core Team Develop Assessment Schedule and Management Plan (SMP):

The PBMA Manager and the Team develop an SMP containing a schedule of PBMA Team meetings, technical interchange meetings, relevant project assessments (data opportunities) and process owner interviews. The plan also includes communication data for assessment participants (phone, fax, e-mail, cell phone etc.). The SMP document is very dynamic and changes daily in the early assessment phases.

6.09 PBMA Manager/Core Team Review Documents:

The assessment team evaluates and analyzes information provided by the project (subject of the assessment) with focuses on critical program/project processes deployed to "make it safe, make it work, and manage risk." The document assessment activity typically includes follow-up discussions between the assessment team and the project to clarify relationships between various documents and, if necessary, acquire additional information.

6.10 PBMA Manager/Core Team & Program Conduct Discovery Technical Interchange Meetings (TIMs), Telecons, ViTS and on-site-Reviews:

The PBMA team conducts interviews (telephone, video-conference or on-site) using a flexible outline of questions provided in advance. The questionnaire serves as a starting point for discussions and focuses on the documentation, deployment, and implementation of critical program/project processes. The flexible outline follows, as appropriate, the assurance elements contained in the PBMA model.

PRODUCTION PHASE

6.11 PBMA Manager/Core Team Factual Review Draft (without conclusions or recommendations):

The assessment team assembles the Factual Review Draft using information acquired from the Discovery Phase (i.e., technical interchange meetings, documents, on-site assessment). The team uses the PBMA model (see supplemental references in Appendix A) as an outline for preparation of the report. The draft is submitted to program process owners for review and to verify accuracy. The core team works on an iterative basis with the individual commentors to clarify and/or resolve any points of fact.

6.12 PBMA Manager/Core Team Management Review Draft (with conclusions and recommendations):

Based on the information assembled and analyzed from the Discovery Phase, the assessment team develops a set of findings, observations, conclusions, and recommendations which are then coupled to the updated/revised Factual Review Draft. This document constitutes the Management Review Draft.

6.13 AA/SMA Review report for Facts and Policy

OSMA Management reviews the Management Review Draft for completeness, accuracy, and consistency in accordance with OSMA responsibilities contained in reference 4.1. Comments are provided to the PBMA Manager from his/her review.

6.14 PBMA Manager/Core Team Prepare Final Report and Transmittal Letter:

The PBMA Manager finalizes the report and prepares a cover letter for formal delivery of the Final Report to the cognizant Strategic Enterprise. The Supplemental References in Appendix A contain additional information on this step.

6.15 AA/SMA Approve?

If the AA/SMA concurs with the Report, he/she signs the transmittal letter and returns the letter and the report to the PBMA Manager for distribution. If it is not acceptable, he/she annotates the letter and returns it to the PBMA Manager for revision. (Internal Customer Feedback).

6.16 PBMA Manager/Core Team Prepare Briefing Packages:

After the AA/SMA signs the transmittal letter, an appropriate number of copies are made (normally about 50) for filing and distribution. The Final Report and transmittal cover letter are designated as Quality Records. The Team prepares an overview and detailed briefing packages to facilitate the direct and timely presentation of report findings and conclusions to the cognizant Strategic Enterprise as well as other members of the NASA senior management team.

6.17 PBMA Manager/Core Team Outbrief Program/Project Management:

The PBMA Manager briefs the Strategic Enterprise staff and other NASA Management. This briefing focuses on principle findings, observations, and recommendations and includes any required follow-up actions. (Internal Customer Feedback).

6.18 PBMA Manager Closeout:

The assessment team manager completes all closeout activities including preparation and transmittal of letters of appreciation to all key participants in, and contributors to the independent assessment.

7. Quality Records

Record ID	Owner	Location	Media Electronic /Hardcopy	Schedule Number & Item Number	Retention & Disposition
Initiation Letter	OSMA Corres Control	OSMA Chron File	Hardcopy	Schedule: 1 Item: 22	Retire to FRC when 5 years old in 5 year blocks, then retire to NARA when 10 years old
Transmittal Letter and Final Report	PBMA Manager	Code QE Files	Hardcopy	Schedule: 5 Item: 29	Keep until 1 year after reviewed project completion then transfer to FRC then NARA 6 years after reviewed project completion

Appendix A: Supplemental References

The following references are supplemental and can be used to aid in the understanding of PBMA. Copies of the reports can be obtained from the Author.

- "Life Cycle Risk Management Elements for NASA Programs, A Program Manager's Guide to Faster / Better & Cheaper," J. Steven Newman, Senior Technical Advisor, Office of Safety & Mission Assurance, National Aeronautics & Space Administration, June 1997. {PBMA Model Guidance Information}

- IAA-99-IAA.6.1.01, PROCESS BASED MISSION ASSURANCE, J. Steven Newman, National Aeronautics and Space Administration (NASA), Washington, DC 20546, USA 50th International Astronautical Congress, 4-8 Oct 1999/Amsterdam, The Netherlands {PBMA Model Guidance Information}